

Claims:

1. A fluid control device, characterized by comprising:
a first and a second fluid paths of a hollow shape;
a housing portion formed between said first fluid path and said second fluid path and having a hollow portion with a cross sectional area larger than those of said both fluid paths;
and

a valve member mounted at an opening portion at which said first fluid path communicates with said hollow portion, having a body and a projection portion which satisfy below described requirements: (1) and (2), and being formed of an elastic material, wherein a fluid flow from the first fluid path to said hollow portion is allowed above a predetermined fluid pressure, where:

(1) the body of said valve member is formed of a tubular member which can be inserted into said first fluid path, and has in its side portion at least one communication portion to allow fluid flow from the first fluid path to the hollow portion;
and

(2) said projection portion is formed at the tip end portion of said tubular member on the side of the hollow portion, and is configured to project towards the inner wall face of said housing portion and have on the inner side of the body a hollow cavity portion which communicates with said communication portion, wherein at least a part of the outer edge portion of said cavity portion sits on the inner wall face of said housing portion to close the fluid flow from the first fluid path to said hollow portion below a predetermined fluid pressure, but allows the foregoing fluid flow above a predetermined fluid pressure.

2. The fluid control device according to claim 1, characterized in that the material of the valve member is an elastic material.

3. The fluid control device according to claim 2,

characterized in that the material of the valve member is silicon rubber.

4. The fluid control device according to claim 1, 2 or 3, characterized in that the communication portion of the valve-member body portion is a concave portion formed in the side portion of the valve-member body portion.

5. The fluid control device according to claim 1, 2, 3, or 4, characterized in that the projection portion of the valve-member body portion has an approximately-hemispherical shape on the second-fluid-path side thereof, and is formed with a cavity portion on the first-fluid-path side thereof.

6. The fluid control device according to claim 5, characterized in that the cavity portion has a hollow, approximately-hemispherical shape.

7. The fluid control device according to claim 1, 2, 3, 4, 5 or 6, characterized in that the cavity shape of the hollow portion on the second-fluid-path side is of an approximately-circular cone of which diameter is successively reduced from the first-fluid-path side toward the second-fluid-path side.

8. The fluid control device according to claim 1, 2, 3, 4, 5, 6 or 7, characterized in that the housing portion is comprised of a first housing member formed by bulging an end of the first fluid path and a second housing member formed by bulging an end of the second fluid path, and is formed through a fitting of said two housing members without using adhesives.

9. The fluid control device according to claim 8, characterized in that the housing portion is configured such that the bulged portion of the second fluid path is fitted into the bulged portion of the first fluid path.

10. The fluid control device according to claim 8 or 9, characterized in that the material of the first housing member has a larger thermal contraction compared to the material of the second housing member.

11. The fluid control device according to claim 8, 9 or 10, characterized in that the material of the first housing member is polypropylene resin and the material of the second housing member is polycarbonate resin.

12. The fluid control device according to claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or 11, characterized in that mutually engageable engaging portions are provided in the end portion of the valve member on the side opposite to its projection portion and in the first fluid path, the valve member being to be placed in the first fluid path, so that the engagement of said both engaging portions cause the valve member to be placed under a tension in the lengthwise direction in the first fluid path.

13. The fluid control device according to claim 12, characterized in that the relationship between the length (c) of the body portion of the valve member and the length (d) from the engaging portion of the first fluid path to the hollow-portion base portion is from 1 : 1 to 1 : 1.25.

14. The fluid control device according to claim 12 or 13, characterized in that said (c) is 1.45 cm and said (d) is from 1.45 to 1.8 mm.

15. The fluid control device according to claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14, characterized in that said valve member is opened by pressure (F) of the fluid flowing from the first fluid path to said valve member of below 0.2 Kg/cm^2 so that the first fluid path and the hollow portion are communicated for a fluid flow.

16. A drug supply line, comprising:
a drug supply means;
a tubular member extending from said drug supply means
and through which the drug flows;
a drug administering means for administering the drug to
the human body via said tubular member;
a transducer for measuring the pressure inside said
tubular member; and
a pressure-value display means for displaying the signal
outputted from said transducer as a pressure value, said drug
supply line being characterized by using the fluid control
device according to claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,
12, 13, 14 or 15 as the fluid control device.

17. The drug supply line according to claim 16, characterized
in that the drug supply line is an infusion line and the
pressure-value display means is a blood-pressure-value display
means.